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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,599	01/02/2001	Wayne L. Howie	65797	1924

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EXAMINER

SUN, XIUQIN

ART UNIT

PAPER NUMBER

2863

DATE MAILED: 08/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/673,599	HOWIE ET AL.	
	Examiner Xiuqin Sun	Art Unit 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 June 2003.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 02 January 2001 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8, 11-13, 15-17 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry et al. (U.S. Pat. No. 4581712) in view of Fisher, Jr. et al. (U.S. Pat. No. 4604706) and Stankus et al. (U.S. Pat. No. 5542788).

Perry et al. teach an apparatus and method for monitoring the dynamic loading rate on support systems used in an underground mine to withstand abutment pressure (see abstract; col. 1, lines 40-57; lines 65-68 and col. 2, lines 1-2), comprising: at least one load sensing device adapted to be coupled to one or more of the support systems used in the underground mine (col. 2, lines 27-42; col. 3, lines 58-68 and col. 4, lines 1-4); a programmable controller for processing support system loading information received from said at least one load sensing device (col. 2, lines 43-68; col. 3, lines 14-20 and col. 4, lines 5-23); and a printer that prints out reports generated by said programmable controller to provide warning indications used as an aid in determining when to install additional support systems and alert miners of dangerous loading conditions on the support systems (col. 3, lines 21-57; col. 5, lines 60-66 and col. 6, lines 3-7). Perry et al. further teach that: said load sensing device comprises a pressure

transducer (col. 4, lines 52-59); said programmable controller comprises an embedded microprocessor having based system (col. 5, lines 40-59); said programmable controller identifies and calculates loading rate changes on said load sensing device installed on the support systems (col. 1, lines 40-57; lines 65-68 and col. 2, lines 58-68); said programmable controller is programmed to sequentially generate a warning report as the loading rate increases on the support systems (col. 3, lines 21-57). Perry et al. further teach: providing timely warning indications directly to the miners through the use of alarm indicators, including audible alarm indicators (col. 1, lines 15-27; col. 5, lines 60-66 and col. 6, lines 3-7); the means for determining support system loading information is programmable (col. 2, lines 43-68; col. 3, lines 14-20 and col. 4, lines 5-23); and the determining is performed by a programmable controller (col. 2, lines 43-68; col. 3, lines 14-20 and col. 4, lines 5-23).

The Perry does not mention explicitly: reporting real-time analysis on the sensed data directly to the miners through the use of sensor indicators located in the vicinity of said at least one load sensing device and controlled by said programming controller. The Perry apparatus and method neither mention explicitly: said load sensing device comprises a strain gauge; said load sensing device is adapted to be coupled to one or more of longwall shields, mobile roof support (MRS) machines, hydraulic jacks, rock bolts, steel sets, roof trusses and the like; said load sensing device is mounted with the underground mine support systems; and said plurality of sensory indicators comprise audible alarm indicators.

Fisher, Jr. et al. disclose an apparatus for failure prediction of earth structures, and teach: reporting real-time analysis on the sensed data directly to the miners through the use of sensor indicators located in the vicinity of said at least one load sensing device and controlled by said programming controller (col. 3, lines 29-37, lines 47-60; col. 4, lines 5-12, lines 30-39; col. 5, lines 65-68; col. 6, lines 1-4; col. 14, lines 29-45; col. 15, lines 3-13; col. 16, lines 54-68 and col. 17, lines 1-10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the Fisher, Jr. et al. alarm indicators in the Perry system in order to alert miners directly of any on-going development of for any hazardous mine conditions or damage to the equipment within the mine through visual or audio indicators located in the vicinity of the sensing device (Fisher, Jr. et al., abstract).

Stankus et al. disclose a method and apparatus for real-time monitoring mine roof support systems (see abstract; col. 4, lines 3-12; col. 16, lines 20-29; col. 19, lines 34-40 and col. 20, lines 47-52), and teaches: a load sensing device comprises a strain gauge (col. 15, lines 58-61 and col. 16, lines 16-19); said load sensing device is adapted to be coupled to one or more of longwall shields, mobile roof support (MRS) machines, hydraulic jacks, rock bolts, steel sets, roof trusses and the like (col. 15, lines 51-68 and col. 16, lines 1-19); said load sensing device is mounted with the underground mine support systems (col. 4, lines 34-40; col. 4, lines 60-68; col. 5, lines 30-35 and lines 38-42).

It would have been obvious to include the teaching of Stankus load sensing device in the Perry apparatus in order to measure and record the load pressures

exerted on the roof support device and identify the areas of maximum pressure in the mining operation in real time (Stankus et al., col. 4, lines 3-12).

3. Claims 9-10, 14, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry et al. in view of Fisher, Jr. et al. and Stankus et al., as applied to claims 1-8, 11-13, 15-17 and 21 above, and further in view of Scott et al. (U.S. Pat. No. 4480480).

Perry et al., Fisher, Jr. et al. and Stankus et al. teach a method and apparatus that includes the subject matter discussed above except that: said plurality of sensory indicators comprise various color visual indicators including multicolor strobes, light-emitting diodes (LEDs), fluorescent visual indicators and the like; said programmable controller is programmed to sequentially report the increases of loading rate through different color lights; the load sensing device is welded onto the support systems in the installing step.

Scott et al. disclose a system and method for assessing the effect of a loading acting on a structure which teach the use of visual indicators to display output results (col. 30, lines 26-36 and col. 18, lines 44-63;). Scott et al. further teach a way to install a load sensing device by welding it onto the support systems (col. 14, lines 58-64;).

The Examiner takes official notice that various color visual indicators including multicolor strobes, light-emitting diodes (LEDs), fluorescent visual indicators are well known in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teachings of Scott visual indicators and load sensor installation technique in the combination of Perry, Fisher and Stankus in order to

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monitor the loading rate on the mine support systems more accurately and alert miners of dangerous loading conditions more effectively.

4. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perry et al. in view of Fisher, Jr. et al. and Stankus et al. as applied to claim 15 above, and further in view of Koppers et al. (U.S. Pat. No. 4887935).

The Perry, Fisher and Stankus combination teaches a method and apparatus that includes the subject matter discussed above except that: the load sensing device is hydraulically coupled to the support systems in the installing step.

Koppers et al. teach a technique to install a load sensing device in the way that it is hydraulically coupled to the support systems (col. 9, lines 31-42).

It would have been obvious to include the teachings of Koppers technique for load sensing device installation in the combination of Perry, Fisher and Stankus combination in order to measure said loading rate more accurately (Koppers, col. 9, lines 31-35).

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perry et al. in view of Fisher, Jr. et al. and Stankus et al. as applied to claims 1 and 21 above.

Perry et al., Fisher, Jr. et al. and Stankus et al. teach an apparatus for monitoring the dynamic loading rate on support systems used in an underground mine to withstand abutment pressure that includes the subject matter discussed above. Perry et al., Fisher, Jr. et al. and Stankus et al. do not mention explicitly that said apparatus is used for monitoring the dynamic loading rate on any support system to withstand abutment pressure.

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the apparatus taught by the combination of Perry, Fisher and Stankus is generic, in terms of functionality and structure, to any support system to withstand abutment pressure. In view of the teachings disclosed by Perry et al., Fisher, Jr. et al. and Stankus et al., one having ordinary skill in the art would be able to merely apply the same technique to develop an apparatus for monitoring the dynamic loading rate on support systems to withstand abutment pressure. It has been held that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

### ***Response to Arguments***

6. Applicant's arguments with respect to claim 06/17/2002 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-24 are rejected as new art (U.S. Pat. No. 4604706) has been found to teach a plurality of sensory indicators located in the vicinity of at least one sensing device and controlled by a programmable controller. For detailed response, please refer to the section 2 set forth above in this Office Action.

In response to Applicants' argument that "the Office Action does not cite, ...., sufficient motivation to modify or combine the references to result in the claimed combination", the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The Examiner further recognizes that the test for obviousness is not whether the features of a second reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, it is deemed that all the cited prior art references are in the same area. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine or modify the teachings of the reference in order to provide an apparatus and method for monitoring structural change of support systems withstanding abutment pressure, in particular, those systems used in an underground mine.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in

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this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

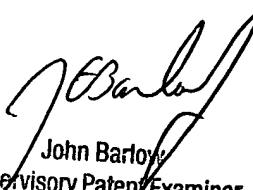
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (703)305-3467. The examiner can normally be reached on 7:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

XS  
August 18, 2003

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800